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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/756,772	01/10/2001	Jong In Song	EM/SONG/6404	6482

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EXAMINER

TAKAOKA, DEAN O

ART UNIT	PAPER NUMBER
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2817

DATE MAILED: 05/22/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/756,772

Applicant(s)

LEE ET AL.

Examiner

Dean O Takaoka

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 26 March 2002.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 4-6 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 4-6 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 26 March 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All   b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### *Claim Rejections - 35 USC § 112*

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 4 – 6 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Claim 4 recites "**phase**" and "**ripple**" (e.g. "wherein said first and second capacitances are arranged to match **phase** velocities of signals in said input transmission line with **phase** velocities of signals in the output transmission line..." ) and "**ripple**" (e.g. where the first and second capacitances are arranged to match phase velocities of signals...and thereby improve gain characteristics by reducing gain **ripple**...).

It is asserted by the Applicant's amendment "that support for the recitation of input/output **phase** velocity matching is found, for example, in lines 7-18 on page 3". While the Examiner agrees that page 3, lines 7-18 recites matching between the FET (e.g. gate line and drain line) and the input and output transmission lines (as stated in the arguments), the specification does not recite the limitation of "phase". The limitation of claim 4 discloses the matching of the first and second capacitances with respect to the phase to improve the gain characteristics. The equations 1 and 2 and Table 1

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(pages 3 and 4) do not show or suggest any "phase" with respect to the "velocity" of the signal in the transmission line. Table 1 and equations 1 and 2 are drawn to showing the capacitance values with respect to the impedance ( $Z_{in}$ ,  $Z_{out}$ ) of the signal.

The Examiner asserts that it cannot be said that the specification supports the limitation of "phase" with respect to the "velocity" of the transmission signal, further that velocity of the signal may also be defined as the propagation speed of the signal and not the phase of the signal.

With respect to "**ripple**", while the specification clearly recites that the gain-bandwidth remains the same (e.g. not decreased – page 3, lines 3-6), it cannot be found in the specification where the "phase velocity" reduces "gain ripple". With respect to "phase", the term "phase" with respect to velocity is considered "new matter" negating the further limitation affecting "gain ripple". Even if the term "phase" were omitted or deleted, it is asserted that the specification still does not show where "velocity" alone would reduce "gain ripple".

The limitations are considered "new matter" by Examiner. The Examiner invites the Applicant to point out where else in the specification, the limitations of "phase" and "ripple" may be found.

### ***Claim Objections***

While applicant may be his or her own lexicographer, a term in a claim may not be given a meaning repugnant to the usual meaning of that term. See *In re Hill*, 161 F.2d 367, 73 USPQ 482 (CCPA 1947). The term "increasing bandwidth" in claim 4 is

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used by the claim to mean "an increase of bandwidth," while the accepted meaning is "gain-bandwidth remains the same or is not decreased."

With respect to the disclosure, it is shown where the traveling wave designs of the prior art results in a decrease of gain-bandwidth due to a mis-match of velocity of the transistor of the traveling wave amplifier. It is recited where the bandwidth is decreased (e.g. page 1, all). It is further recited that the object of the current invention is to match the input and output velocity of the traveling wave signal (page 3, lines 7-13) or to maximize, not decrease the existing bandwidth. While it can be said that the bandwidth is increased over the unmatched design of the prior art, the bandwidth is not increased over any existing theoretical maximum width, only that it is maximized, therefore the term is considered repugnant by the Examiner.

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 4 – 6 are rejected under 35 U.S.C. 102(b) as being anticipated by Beyer et al (U.S. Patent No. 5,046,155).

#### **Claim 4:**

Beyer et al. (Fig. 8) shows a traveling wave amplifier, comprising: an input transmission line (Ld/2 to node 42) an output transmission line including first and

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second gate lines (defined by the Examiner as any of the gate transmission lines shown in Fig. 8 as  $L_g/2$ ); a first FET (e.g. a first FET represented by the generic symbol of a diamond with arrow at node 42) having a drain terminal connected between the first and second drain lines (defined by the Examiner as the drain transmission lines shown in Fig. 8 as  $L_d/2$  adjacent to the first FET); a second FET (e.g. a second FET represented by the generic symbol of a diamond with arrow at node 42 – active device T-section) having a drain terminal connected between the third and fourth drain lines (defined by the Examiner as the drain transmission lines shown in Fig. 8 as  $L_d/2$  adjacent to the second FET); a first additional capacitance connected between the second and third drain lines ( $C_{ds}/2$ ); and a second additional capacitance connected to the fourth drain line ( $C_{ds}/2$ ), where the first and second capacitances are arranged to match the phase velocities of signals in the input transmission line with the phase velocities of signals in the output transmission line (where Beyer et al. shows the equation of lines of the distributed amplifier as  $s_{31}$  and  $s_{41}$  (col. 3, lines 45-64) where  $\beta$  is the phase shift along the  $\pi$ -sections of the transmission lines (col. 3, line 57), further where an equation is given (col. 4, lines 10-14) for transconductance ( $g_{mi}$ ) where the capacitance of the capacitors of the transmission lines determines the transconductance (col. 3 line 60 to col. 4, line 44) thus matching the phase velocity of the signal) thereby inherently improving gain characteristics by reducing gain ripple and increasing bandwidth (It is asserted by the Examiner that since the capacitors are established to keep the transconductance along each line constant thus matching the phase shift, the phase velocity along the  $\pi$ -sections of each signal line would also be matched, hence the

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design of Beyer et al. would also inherently improve gain characteristics by reducing gain ripple and increasing bandwidth, further in view of the USC 112 1<sup>st</sup> paragraph applied above where the limitations are not found supported by the specification).

Claim 5:

Beyer et al. (Fig. 8) shows the drain and gate transmission lines (in which Fig. 8 is an equivalent circuit of Fig. 7 disclosed as equivalent  $\pi$  and T sections for nodes 40 and 42 shown in Fig. 3 with respect to Fig. 6 – col. 4, lines 45-55, thus it is established in Fig. 3 (in view of Figs. 6, 7 and 8) that  $L_d$  is shown as a length) and inherently a distance between drain terminals of the first and second FET's (where  $L_d$  is the length between nodes 42 where the first and second FET's are shown in Fig. 8), inherently where  $(1-x)L_d$ ,  $0 < x < 1$ , is a length of the first and third drain lines (where the total length of drain lines is  $L_d$  (e.g. Fig. 3), and where each drain line is shown in Fig. 8 as  $L_d/2$  of Beyer et al., thus not equal to 0 and less than 1, thus inherently where  $(1-x)L_d$ ,  $0 < x < 1$ , is a length of the first and third drain lines), and inherently meeting each and every limitation of claim 5.

Claim 6:

Beyer et al. shows the individual transmission lines between the nodes (42) as  $L_d/2$  (Fig. 8) and the total length between nodes (42) as  $L_d$ , thus each individual length equal to 0.5.

***Response to Arguments***

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Applicant's arguments with respect to claims 1 – 3 (claims 1 – 3 now cancelled and replaced by newly added claims 4 – 6) have been considered but are moot in view of the new ground(s) of rejection.

### ***Conclusion***

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Gamand et al. – shows a high-gain distributed amplifier.

Schindler et al. (734) – shows a distributed amplifier.

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.



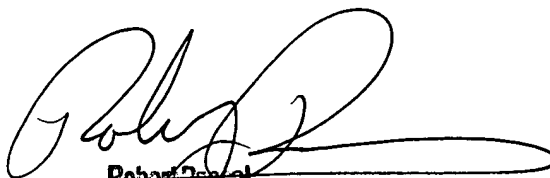
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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dean O Takaoka whose telephone number is (703) 305-6242. The examiner can normally be reached on 8:30a - 5:00p Mon - Fri.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert Pascal can be reached on (703) 308-4909. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 308-6251 for regular communications and (703) 308-6251 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

dot  
May 17, 2002



Robert Pascal  
Supervisor, Patent Examiner  
Technical Center 300